



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/592,005

09/07/2006

Akira Yamashita

13702/2

6789

23838 7590 02/14/2008

KENYON & KENYON LLP
1500 K STREET N.W.
SUITE 700
WASHINGTON, DC 20005

EXAMINER

LEUNG, KA CHUN A

ART UNIT

PAPER NUMBER

3747

MAIL DATE

DELIVERY MODE

02/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/592,005	Applicant(s) YAMASHITA ET AL.	
	Examiner Ka Chun Leung	Art Unit 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-18 is/are pending in the application.
- 4a) Of the above claim(s) 3-8 and 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 9, 10 and 18 is/are rejected.
- 7) ☒ Claim(s) 11, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/07/06 and 01/04/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 3-8 and 12-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 01/17/2008.
2. Regarding Claim 8, the Applicant is correct in noting that Claim 8 should belong with Species IV.
3. Regarding Figure 10, the embodiment as illustrated and described includes a return pipe (64) that returns excessive fuel to the upstream side of the pump (61). Species I as described in the Restriction/Election Requirement includes an injection system fuel return passage that returns fuel to the fuel tank. Since Figure 10 returns fuel to the fuel pump and not the fuel tank, Figure 10 does not belong with Species I.

Information Disclosure Statement

4. The information disclosure statement filed 09/07/2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Specifically, a copy of the FR 834 339 reference has not been provided.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Tinney and Hankins et al

8. Claims 2 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tinney (US Patent 6,209,508) in view of Hankins et al (US 6,446,612).

9. Tinney discloses a four-cycle fuel-lubricated internal combustion diesel engine (14) comprising a fuel tank (12), a fuel pump (24), a fuel line (16) connecting the fuel tank (12) to the lubricant pan (22), an inlet port (20), a fuel line (26) connecting the lubricant pan (22) to the fuel injector (29) and a fuel filter (30). However, Tinney does not disclose providing a return fuel line from the fuel injector (29) back to the fuel tank.

10. Hankins et al discloses a fuel injection system (100) comprising a fuel tank (112), fuel filters (101, 103), a fuel pump (102), a fuel rail (105), a fuel body block (110), and a fuel return line (111). Hankins et al notes in Column 2, Lines 57-60 that a "principal object of this invention is to increase the fuel economy of a diesel engine having an injection fuel rail by increasing the amount of fuel returned to the fuel tank from the fuel rail".

11. Thus it would have been obvious to one of ordinary skill in the art to have provided the engine of Tinney with a fuel return line capable of decreasing temperature of fuel returned to the tank, in light of the teachings of Hankins et al, in order to provide an engine with greater fuel economy. Note that it is well known in the art for lubricant supplied from the lubricant/oil pan to the engine components be returned to the oil pan, for example lubricant being directed towards the crankshaft bearings would ultimately drip back into the oil pan, wherein the clearance allowing the lubricant to return to the pan can be considered as a "passage".

Art Unit: 3747

12. Specifically regarding Claim 2, Figure 1 of Tinney depicts the fuel being supplied from the fuel tank (12) to the lubricant pan (22) via the fuel line (16). Fuel from the lubricant pan (22) is supplied to the fuel injector (29) via a second fuel line (26). Figure 1 of Hankins et al depicts the fuel return line (111) connecting the fuel rail (105) back to the fuel tank (112).

13. Specifically regarding Claim 18, the use of electrically powered fuel pumps are well known in that art (see for example US 2003/0026717, US 2003/0017057, US Patent 4,396,358 and US Patent 4,426,978). In the very least these pumps would be shut off and not discharge any fuel when the engine is not running/shut down and discharge a specified amount of fuel when the engine is in operation. Whether the engine is on or off can be considered as an "engine condition" and having no fuel being supplied versus having some amount of fuel supplied can be considered as different "discharge amounts".

Tinney, Hankins et al, and Taylor

14. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tinney (US Patent 6,209,508) and Hankins et al (US 6,446,612).as applied to Claim 1 above, and further in view of Taylor (US patent 4,787,348).

15. Tinney discloses a four-cycle fuel-lubricated internal combustion diesel engine (14) comprising a fuel tank (12), a fuel pump (24), a fuel line (16) connecting the fuel tank (12) to the lubricant pan (22), an inlet port (20), a fuel line (26) connecting the lubricant pan (22) to the fuel injector (29) and a fuel filter (30). Hankins et al discloses

providing a fuel return line (111) and further to increase the amount of fuel returned to the fuel tank to improve fuel economy. Tinney also discloses providing a T-connector (57) for connecting both the supply line from the fuel tank (12) and lubricant pan (22) to the fuel injector (29). Valves (64 and 68) are also provided to control flow. However neither reference discloses providing a three-way valve for the fuel supply passages.

16. Taylor discloses an apparatus for diesel engines comprising a mixture supply tank (34), a filter (106), a diesel supply tank (52), and a valve (100). The valve (100) allows the flow from of fuel from either the mixture supply tank (34) and/or the diesel supply tank (52) to be directed ultimately to the injection pump.

17. Tinney discloses the use of T-connector (57) and valves (64 and 68) to control the amounts of fuel from each of the supply lines. Similarly, Taylor discloses providing a valve with a gate-valve solenoid (80) to control the amounts of fuel from its respective supply lines. Because both Tinney and Taylor teach components of varying amounts of fuel from two sources to the fuel injection system, it would have been obvious to one of ordinary skill in the art to substitute the valves and T-connection of Tinney with the valve of Taylor in order to achieve the predictable result of adjusting the amount of flow from each fuel source.

18. Specifically regarding Claim 9, the valve (100) of Taylor would inherently have an "adjustable degree of opening" if it has at least an open and a closed position.

19. Specifically regarding Claim 10, Taylor discloses providing a fuel pump (75) upstream of the three way valve (100), but provides the filter (106) downstream of the valve (100). Hankins et al discloses providing a filters (101 and 103) both upstream and

downstream of the fuel pump (102). Tinney, Hankins et al and Taylor discloses the claimed invention except for providing the fuel filter between the three-way valve and injection pump. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided a filter between the three-way valve and the injection pump, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Allowable Subject Matter

20. Claims 11, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter:

- a. Regarding Claim 11, the prior art of record fails to disclose or render obvious the combination of features as claimed and in particular a diesel engine wherein the adjustable degree of opening of the three-way valve depends on the temperature of fuel.
- b. Regarding Claim 16, the prior art of record fails to disclose or render obvious the combination of features as claimed and in particular a suction port of the injection-system fuel supply passage being located at a position higher than a suction port of the lubrication system fuel supply passage in the oil pan.

c. Regarding Claim 17, the prior art of record fails to disclose or render obvious the combination of features as claimed and in particular a diesel engine wherein a three-way valve and a regulator are arranged in this order toward a downstream side from the mechanical supply pump.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ka Chun Leung whose telephone number is (571)272-9963. The examiner can normally be reached on 7:30AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3747

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ka Chun Leung/
Examiner, Art Unit 3747

/Stephen K. Cronin/
Supervisory Patent Examiner, Art Unit 3747